

**IN THE CLAIMS:**

The text of all pending claims is set forth below for convenience of the Examiner.

1. (PREVIOUSLY PRESENTED) A wavelength multiplexing optical apparatus, comprising:

an arrayed-waveguide grating having an output port and a plurality of input ports;  
light emitting means for generating a pilot signal to be input to one of the input ports;  
light detecting means for monitoring the pilot signal extracted from a wavelength multiplexed signal output from the output port; and  
a temperature control circuit for controlling the temperature of the arrayed-waveguide grating in such a manner as to cancel the amount of wavelength fluctuation occurring in the arrayed-waveguide grating and detected by monitoring the pilot signal.

2. (CANCELLED)

3. (PREVIOUSLY PRESENTED) A wavelength multiplexing optical apparatus for outputting a multiplexed signal carrying a first group of optical signals at different wavelengths, comprising:

an arrayed-waveguide grating having a first output port outputting the multiplexed signal carrying the first group of optical signals of different wavelengths respectively input from input ports, and a second output port outputting a pilot signal input from an input port, wherein said first group of optical signals and said pilot signal are transmitted only once by a common arrayed-waveguide;

light emitting means for applying said pilot signal;  
light detecting means for monitoring the pilot signal output from the second output port; and

a temperature control circuit for controlling the temperature of the arrayed-waveguide grating in such a manner as to cancel the amount of wavelength fluctuation occurring in the arrayed-waveguide grating and detected by monitoring the pilot signal.

4. (PREVIOUSLY PRESENTED) A wavelength multiplexing optical apparatus as claimed in claim 1, wherein the light emitting means is a wavelength tunable light source having a wavelength locker function, and generates signal light whose wavelength is swept within the bandwidth of the port at which the pilot signal is input, and

the light detecting means detects the amount of fluctuation in the filter characteristics of

the port by detecting the swept signal light.

5. (PREVIOUSLY PRESENTED) A wavelength multiplexing optical apparatus as claimed in claim 1, wherein the light emitting means comprises a plurality of light sources, and the light detecting means detects the amount of fluctuation in the filter characteristics of the port at which the pilot signal is input, by comparing received light levels between the plurality of light sources.

6. (CANCELLED)

7. (PREVIOUSLY PRESENTED) A wavelength multiplexing optical apparatus as claimed in claim 3, wherein the light emitting means is a wavelength tunable light source having a wavelength locker function, and generates signal light whose wavelength is swept within the bandwidth of the port at which the pilot signal is input, and

the light detecting means detects the amount of fluctuation in the filter characteristics of the port by detecting the swept signal light.

8. (CANCELLED)

9. (PREVIOUSLY PRESENTED) A wavelength multiplexing optical apparatus as claimed in claim 3, wherein the light emitting means comprises a plurality of light sources, and the light detecting means detects the amount of fluctuation in the filter characteristics of the port at which the pilot signal is input, by comparing received light levels between the plurality of light sources.

10. (PREVIOUSLY PRESENTED) A wavelength multiplexing optical apparatus, comprising:

an arrayed-waveguide grating having an output port and a plurality of input ports;

a light emitter, to generate a pilot signal input to one of the input ports;

a light detector, to monitor the pilot signal extracted from a wavelength multiplexed signal output from the output port; and

a temperature control circuit, to control the temperature of the arrayed-waveguide grating and to cancel wavelength fluctuation occurring in the arrayed-waveguide grating by monitoring the pilot signal.

11. (PREVIOUSLY PRESENTED) The wavelength multiplexing optical apparatus according to claim 10, wherein the light emitter includes a wavelength locker and is a wavelength tunable light source to generate signal light whose wavelength is swept within the bandwidth of the port at which the pilot signal is input, and the light detector detects the fluctuation in the filter characteristics of the port by detecting the swept signal light.

12. (PREVIOUSLY PRESENTED) The wavelength multiplexing optical apparatus according to claim 10, wherein the light emitter comprises a plurality of light sources, and the light detector detects the amount of fluctuation in the filter characteristics of the port at which the pilot signal is input by comparing received light levels between the plurality of light sources.

13. (PREVIOUSLY PRESENTED) A wavelength division multiplexing optical transmission apparatus transmitting a multiplexed signal carrying a first group of optical signals at different wavelengths, comprising:

an arrayed-waveguide grating comprising:

a first output port outputting the multiplexed signal carrying the first group of optical signals of different wavelengths respectively input from input ports, and

a second output port outputting a pilot signal input from an input port, wherein said first group of optical signals and said pilot signal are transmitted only once by a common arrayed-waveguide;

a light emitter applying the pilot signal;

a light detector monitoring the pilot signal output from the second output port; and

a temperature control circuit controlling the temperature of the arrayed-waveguide grating and canceling wavelength fluctuation occurring in the arrayed-waveguide grating by monitoring the pilot signal.

14. (PREVIOUSLY PRESENTED) A wavelength multiplexing optical apparatus according to claim 13, wherein the light emitter includes a wavelength locker and is a wavelength tunable light source generating signal light whose wavelength is swept within the bandwidth of the port at which the pilot signal is input, and the light detector detects the fluctuation in the filter characteristics of the port by detecting the swept signal light.

15. (PREVIOUSLY PRESENTED) A wavelength multiplexing optical apparatus as

claimed in claim 13, wherein the light emitter comprises a plurality of light sources, and the light detector detects the amount of fluctuation in the filter characteristics of the port at which the pilot signal is input by comparing received light levels between the plurality of light sources.